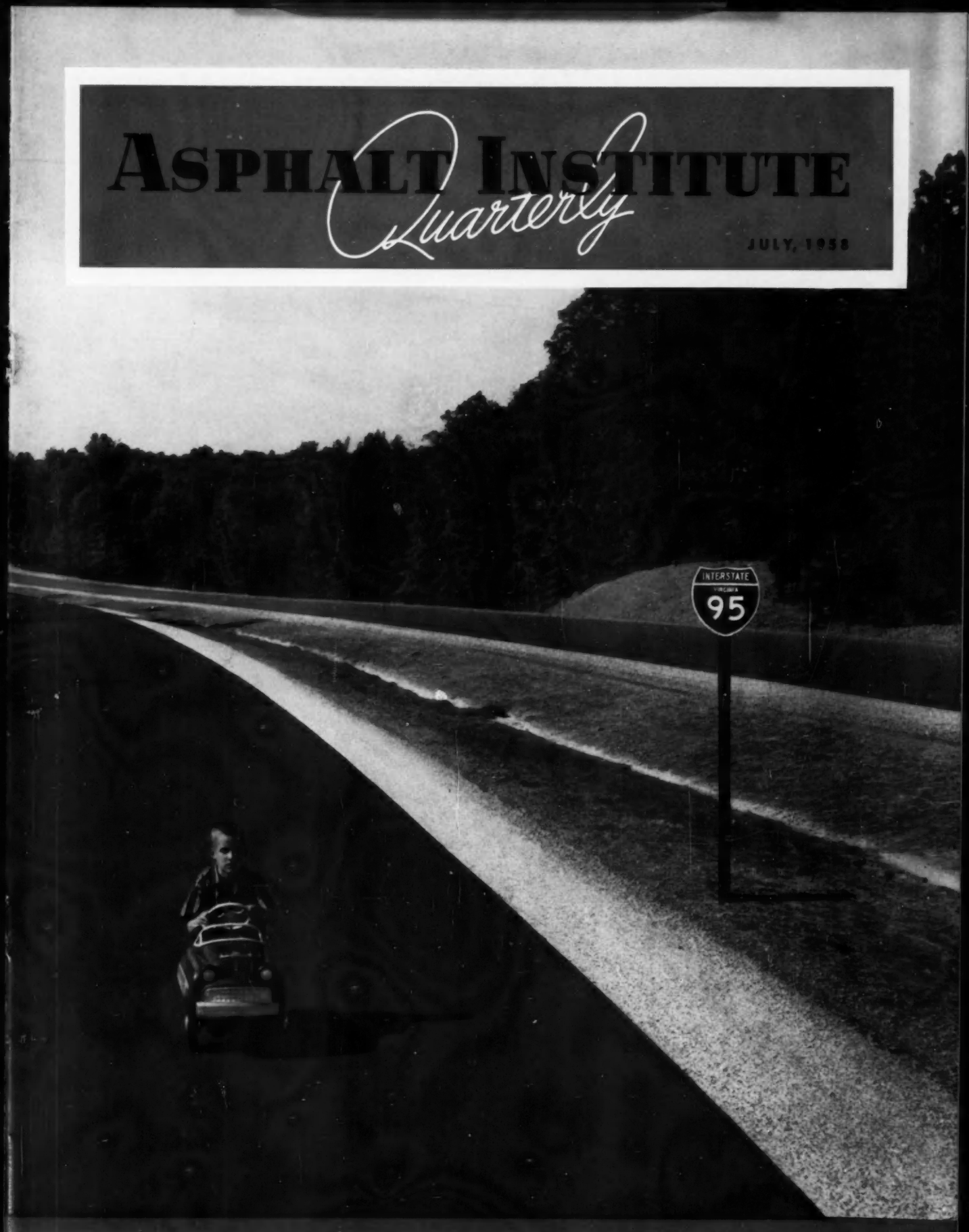
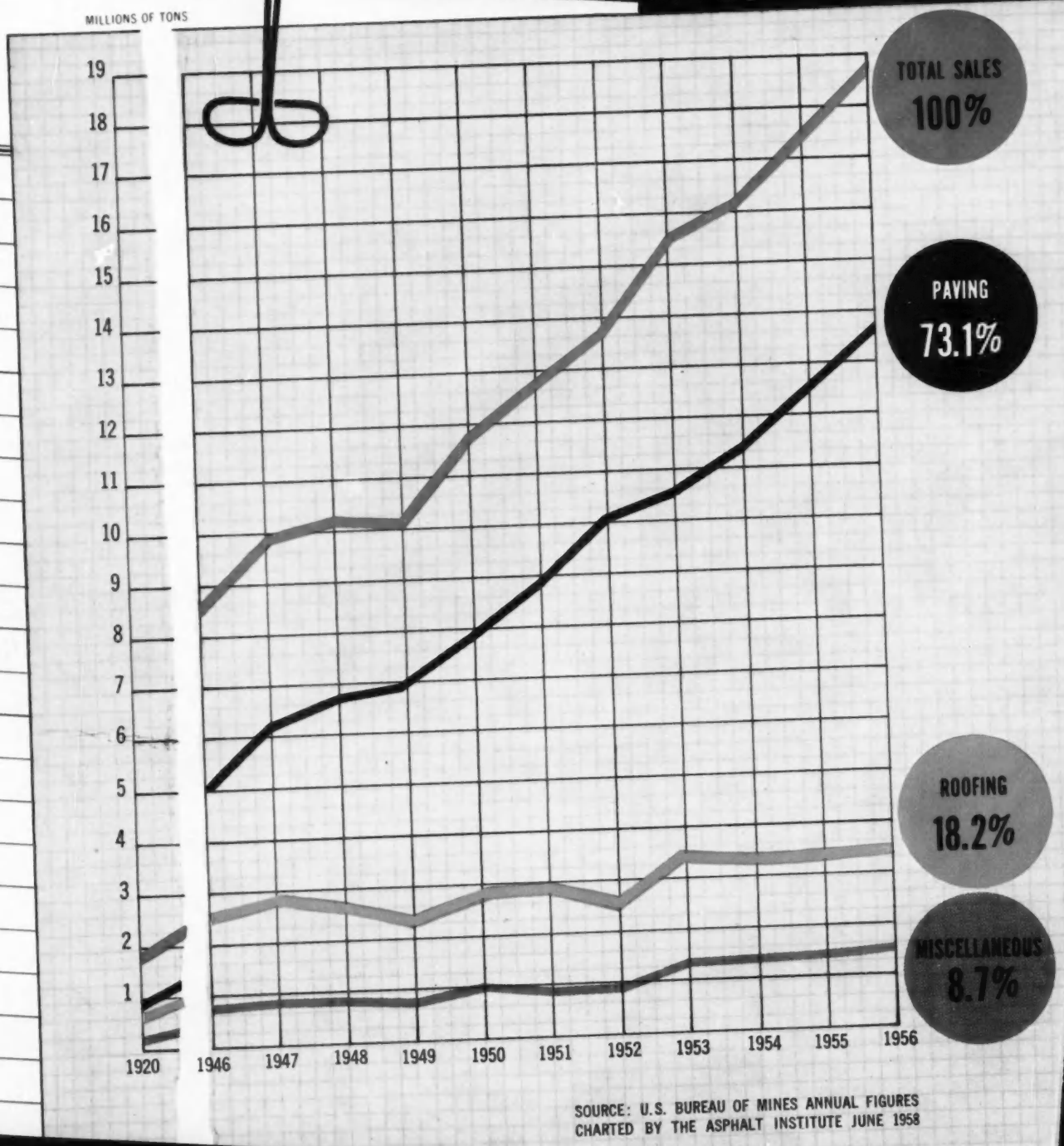
Asphalt Institute Quarterly

JULY, 1958



Annual Sales of PETROLEUM ASPHALT and ROAD OIL to Domestic Consumers in U.S.A. 1920 and POST-WORLD WAR II



SOURCE: U.S. BUREAU OF MINES ANNUAL FIGURES
CHARTED BY THE ASPHALT INSTITUTE JUNE 1958

ASPHALTOPICS

Our April cover, showing the paving of Washington's Pennsylvania Avenue in 1907, set us adrift on a sea of nostalgia. There were a dozen requests for copy prints from veteran paving engineers. And from Joseph Rock Draney, former president of the old Asphalt Association and one-time vice president of the American Road Builders Association, came a warm letter of appreciation. He informed us that the large gentleman in the straw boater in the foreground is Joseph Rock, for whom Mr. Draney was named. He also chided us for reporting that Trinidad Lake asphalt was used on the job. According to Mr. Draney, the contractor, Pat Brennan, never used anything but Bermudez asphalt and that Mr. Rock was the agent for the A. L. Barber Asphalt Company which sold the Bermudez to the District. We stand corrected and somewhat better informed.

State Fair Manager Willard Masterson at Milwaukee's State Fair Grounds is tickled pink with his asphalt-paved race track (October, 1957, QUARTERLY). "Since 1954," he says, "we haven't had to spend a penny on major repaving of any section of the track. Sure, we've had to patch up a low spot at a couple of places but that's been more than paid for by the man hours saved as compared with grooming the old dirt track." Picture shows Rodger Ward (No. 8) coming on the inside to cop the 100-mile national championship at the track last year. Drivers are delighted with the smooth, safe surface. Sam Hanks, 1957 Indianapolis winner, says, "This is real racing . . ."

Henry Helland, Salt Lake City consulting engineer, asks why not shallow grooves in the paved shoulders of roads, running at right angles to the paving course, to discourage motorists from roaming off the driving lanes? His idea: use cleated rollers to make slight indentations at regularly spaced intervals. This would alert the wool-gathering motorist and shepherd him gently and safely back onto the straight and not-so-narrow. It's got raised jiggle bars and striping beat a mile, according to D. W. Gagle, asphalt products engineer for Phillips Petroleum Company, who passed Henry's thinking along to us.

And speaking of rollers, Bros Inc. has come up with a new self-propelled rubber-tired job which produces higher initial compaction than anything we ever heard of. Thirteen of fifteen core samples taken from an Ohio project had Proctor densities of over 100 percent, yet the finished pavement still retained sufficient flexibility to respond to subsequent sub-pavement movement. The 30-ton roller is shown here at work.

Despite the restricted volume of wartime and postwar traffic, more than fifty percent of Germany's famed concrete-paved Autobahn is in serious distress and, as a result, high priority is being given to the accelerated study of flexible asphalt bases. German engineers have about decided that this type of construction is more satisfactory in the long run than resurfacing fractured concrete slabs.

ASPHALT INSTITUTE Quarterly

Volume 10, No. 3 *July, 1958*

Glynn Harvey
Editor

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Robert J. Lowe
Assistant Editor

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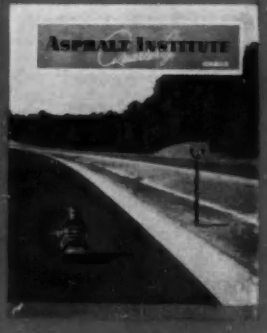

The lure of the open road proved irresistible to young Doug Williams of Richmond who decided to get his Bubblegum V-8 out on the still-unfinished Richmond-Petersburg Turnpike and open 'er up. According to Doug, the smooth-riding asphalt pavement is the most.

—Photo by Norman Willis

The Asphalt Institute Quarterly is published by The Asphalt Institute, an international, nonprofit association sponsored by members of the petroleum asphalt industry to serve both users and producers of asphaltic materials through programs of engineering, research and education.

The member companies of the Institute, who have made possible the publication of this magazine, are listed on page 15.

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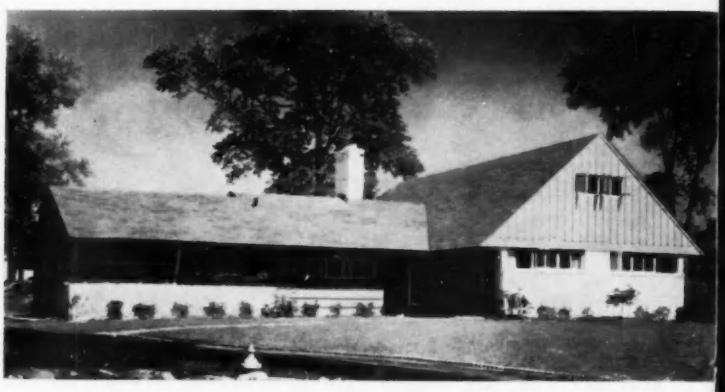
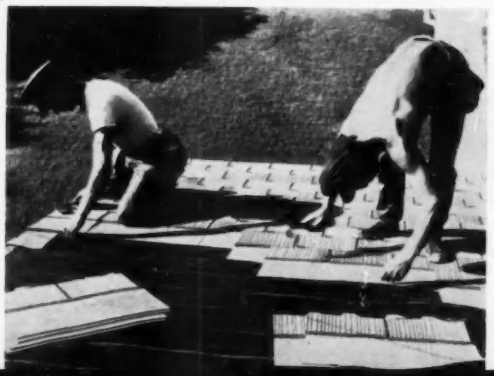
What's New

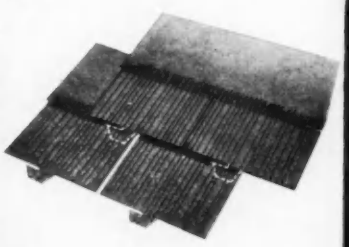
New color combinations were unheard-of until development of sun-fast granules.



Asphalt shingling now protects the 250-year-old birthplace of John Quincy Adams in Quincy, Mass.

New interlocking asphalt shingles offer added protection in regions subject to tornado or hurricane.





In Roofing

By C. J. Van Til

The writer, Cecil J. Van Til, is the executive manager of the Western Asphalt Roofing Manufacturers' Association and a former district engineer of The Asphalt Institute. His comments on new developments in asphalt roofing apply principally to roofing activities in the western states but will serve as a reliable guide to improved practices throughout the United States.

ASPHALT ROOFING may be placed in two broad general categories—"prepared" roofing, and "built-up" roofing. Prepared roofings are those products which are manufactured and packaged ready to apply to the roof deck, usually by nailing only. Asphalt shingles and certain roll roofings are in this category. They consist of a base of saturated felt to which has been added an asphalt coating and, usually, a surfacing of mineral granules. For built-up roofing, only the components are manufactured and delivered to the job—the roofing itself being built up directly on the roof deck in a series of layers or plys.

There are many roofs on which either prepared or built-up roofing can be used, but the choice is limited somewhat by the slope of the deck to which it is to be applied. Built-up roofs are usually applied only on the flatter slopes while the application of asphalt shingles and other prepared roofing is usually confined to the steeper slopes. However, with special techniques asphalt shingles are also often applied on slopes from 2″ to 4″ per foot.

In certain sections of the country subject to high winds, special techniques have been developed to protect conventional asphalt shingles against wind damage. One solution to this problem has been the fastening down of each of the shingle tabs with a small amount of asphalt cement placed under the tab after the shingles have been applied. Other approaches to this problem have been the development of shingles of special patterns which include slots or small tabs for locking the lower edge of the shingle in place, or which are designed to have the lower edge fastened down by a special corrosion resistant staple.

However, the latest development in wind protection for asphalt shingles seems to combine the necessary elements of simplicity and sureness of action without requirements for special patterns or extra labor. For these shingles a special adhesive was developed which does not take hold until it is exposed to heat of the sun. This adhesive is placed on the shingle in such a manner that, after the shingles have been applied to the roof and warmed by the sun, the adhesive firmly cements each tab to the roofing beneath it. No special application techniques are required, and in handling and storing only simple precautions must be taken to keep the shingles from being exposed to the sun for extended periods of time before application.

That this type of shingle has solved the problem of wind damage has been demonstrated by reports of recent hurricanes. Roofs sealed by this new principle have been virtually undamaged. In some cases, the asphalt shingles have remained intact, even though the entire roof structure was blown off.

NEW COLOR IN SHINGLES

We have seen so many of the beautiful colors and color combinations in asphalt shingles that we tend to forget that many of these colors which we now take for granted were unheard of only a few years ago. We have come a long way since the time when only a few basic colors and blends were available. Since an asphalt shingle gets its color from the color of its protective coating of mineral granules, these new colors have been the result of developments in the techniques of manufacturing and coloring these granules.

Until recent years the color of the granule had to be the color of the natural rock from which it was made. Only these natural dyes appeared to be able to withstand without fading, the endless exposure to sunlight and moisture. The advantages of being able to manufacture granules in a great variety of permanent colors is obvious, and this problem has been attacked by roofing and granule manufacturers through many years of difficult research.

This research has paid off. Almost any color of the rainbow is now available, from the pastels to the deep rich tones, and new colors are constantly being put on the market. Factory techniques of application of granules have improved with the development of the new colors, and granules may be applied in almost any blend or pattern of colors desired.

The wealth of colors available in asphalt shingles had much to do with the development of the art of "color styling" of the exterior of homes. Color styling is particularly important in the design of "tract" homes where acceptance by the customer depends as much on the appearance of the homes as a group as on that of the individual home.

Improved felt-layers and asphalt kettles mean greater profits for the roofer and better, longer-lasting roofs for the buyer.

Asphalt Roofs Sanctioned

THERE WAS A TIME when Federal Agencies did not accept asphalt for use on dead-level or low-level roofs. The Army Corps of Engineers Guide Specification CE-220.01 of two years ago for "Roofing; Built-Up, Asphalt and Tar" specified tar only on these roofs.

But during the past few years The Asphalt Institute and its Members encouraged government authorities to give consideration to the use of asphalt in this type of construction. Agencies in the midwest and on the west coast had been using asphalt successfully in dead-level roof construction for many years. Thus, it seemed logical that asphalt should be included in Federal specifications for dead-level roofs.

The National Bureau of Standards, upon which most government agencies rely for advice on roofing matters, undertook a study of the situation. The result: the Corps of Engineers has issued instructions to its field offices advising them that the use of asphalt for dead-level roof construction is accepted on a competitive basis with coal-tar.

Boston's new Columbia Point development rode out a full hurricane and came through it unscathed, says Contractor John Shea with pardonable pride.

INDUSTRIAL ROOFS

Recent years also have seen changes in built-up roofing for industrial and commercial buildings, but these should more rightly be called changes in emphasis on the use of certain types of asphalt rather than changes in the materials themselves. Particularly in the West, there is evidence of a considerable shift of the construction of industrial and commercial buildings with flat, or nearly flat roofs. These flat decks allow the use of an asphalt with a considerably lower melting point than could be used on the steeper roofs. These softer asphalts have a longer life than the harder material which must be used on the steeper slopes in order to prevent sliding during hot weather.

Also, they usually are manufactured with greater temperature susceptibility in order that any small cracks which may develop from contraction, expansion, or minor movements due to settling of the building may be healed by the softening and slight flowing which occurs in the asphalt on the roof during hot weather. This "healing" of cracks is of greater importance

on flat slopes where water may remain for some time after a rain than it is on steeper slopes where water drains away immediately.

The manufacture of low melt point asphalts for use specifically on flat decks highlights the many advantages of being able to "tailor make" asphalts with characteristics which best fit the intended service requirements. There is a roofing asphalt available for use in any climate and on any slope on which built-up roofing can be used.

ROOFING APPLICATION EQUIPMENT

It is safe to say that there has been greater progress made in the development of new equipment for the roofing applicator in the last half dozen years than in the fifty years prior to that. And, what is more important, the acceptance and use of this equipment is beginning to keep pace with the development.

In the handling of asphalt shingles, pallets and fork lifts are almost universally used. On the job, many roofers now go one step further than the mere mechanical unloading of trucks—they place the shingles directly on the roof from the truck. Fork lifts, or, in some cases, lift-bed trucks are used for this purpose. On buildings too high for this type of equipment, there are a great variety of elevators and hoists available—from simple attachments for use with ladders to elaborate power-operated apparatus.

KETTLE IS THE KEY

The heart of the entire built-up roofing operation is the kettle for heating the asphalt to the proper temperature for application. For efficient operation the kettle must be able to bring the asphalt up to this temperature in a short period of time, and yet overheating at the start, or at any time during the kettle's operation, may seriously damage the asphalt and considerably reduce the life expectancy of the roof.

Overheating may also cause the asphalt to be applied too thinly, resulting in poor adhesion between the roofing felts and possible later separation of the plys. It is likely that more failures in built-up roofing can be traced to overheating of the asphalt than to any other factor.

Most of these overheating problems can be solved by the use of the recently developed thermostatically controlled kettles. Standard temperature controls, similar to those used in the control of heating in the home, are adapted to this use. The thermostat is merely set to the desired temperature and the burner is shut off automatically when the asphalt reaches this temperature—not to be turned on again until the temperature drops below the established range.

The addition of a circulating pump to such a kettle results in an even temperature throughout and prevents local overheating. This recirculating of the asphalt may be done by a pump whose primary function is to raise the hot asphalt to the roof easily and quickly, thereby saving considerable labor and resulting in very little cooling of the asphalt before it is applied —a big improvement over the slow, inefficient methods of hoisting to the roof in buckets. Recent pump designs have proved to be practically fool-proof as far as plugged lines and break-downs are concerned.

FELT-LAYER A MUST

The next step in the mechanization of the built-up roofing operation is the "felt layer." This machine applies hot asphalt and a layer of felt in one uniform, continuous, controlled operation. On all but the smallest jobs the felt layer is almost a must if a roofing contractor is to compete in quality or quantity.

The spreading of the roofing aggregate is also often done mechanically. These "gravel spreaders" do a much more uniform and efficient job than can be done by hand with shovels. The felt layer, or a "flood coater," may be used to apply the flood coat of asphalt, and is followed immediately by the gravel spreader, thus assuring that the roofing aggregate is placed before the asphalt has a chance to cool.

The availability of such a wealth of new application equipment is both an opportunity and a challenge to the roofer. There is an opportunity for the production of a better roof at lower cost, but each job presents a challenge in engineering of the operation to make the best use of the equipment available. With the proper use of mechanized methods, nobody loses—the roofer can make greater profits and the owner gets a better, longer lasting roof.

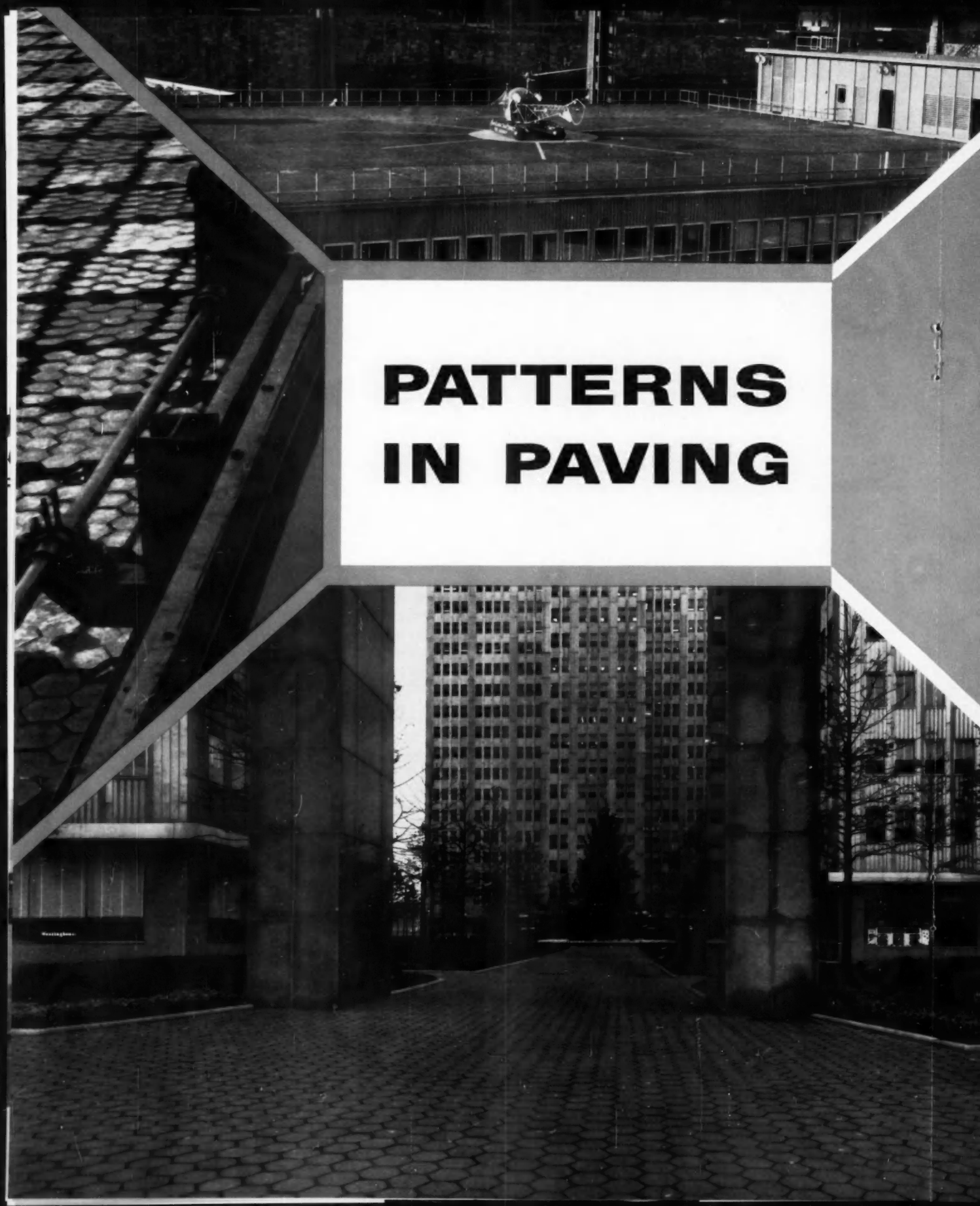
RICHARD C. DRESSER | *Publisher*

NEARLY FOUR HUNDRED years ago, Cervantes wrote: "He that publishes a book runs a very great hazard, since nothing can be more impossible than to compose one that may secure the approbation of every reader."

In spite of Cervantes' somber warning, Dick Dresser, former editor of The Asphalt Institute QUARTERLY, has launched upon a book-publishing career in his native Boston. Yaleman Dresser comes honestly by his yen to publish. Before serving his hitch with the Institute, he apprenticed to the late Richard C. Smith, one of the nation's more colorful book publishers.

R. C. Dresser and Company, Inc., has set up shop in the chaste purlieus of Boston's old Back Bay where he's bringing to a slow simmer several likely titles, including a New England garden book scheduled for the 1959 spring book list. Lilac-lovers will kindly alert their friendly neighborhood book store.

Dick assures us he has no plans for bringing out his own volume of asphalt paving specifications.



PATTERNS IN PAVING

IN A SENSE, asphalt block represents the classical school of pavement engineering.

Nearly a century ago, when asphalt technology was in rompers, many pioneer paving engineers thought in terms of blocks: granite and wooden blocks, paving bricks or cobblestones. They were the trustees of an engineering concept that traced its lineage back to the old Roman roads.

And so, it's not surprising that asphalt blocks were being fabricated as early as 1869 in San Francisco where they were used for paving the steep slopes in that city. These blocks were produced from hand molds with manually operated presses, and were composed of Trinidad asphalt with crushed stone aggregate. The mechanical press was invented in 1880, and today asphalt blocks are punched out by high-speed hydraulic presses.

ARCHITECT'S TOOLS

Asphalt blocks are especially popular with landscape architects who delight in fashioning bold, distinctive patterns that are impossible with monolithic-type pavement. For this reason, hexagonal blocks are most widely used, usually with a border of rectangular blocks to establish a curbing.

Installation of asphalt blocks is simple. They can be laid over any stabilized base such as sand, gravel, cinders, or similar material readily available in the immediate area. And the blocks will furnish a safe, comfortable footing almost indefinitely. The Department of Parks in New York City has been using hexagonal asphalt paving blocks since 1888. Walks have been laid with them in virtually every park in the city.

At Prospect Park, Brooklyn, hexagonal blocks laid down at the turn of the century are still attractive and serviceable. Across town, Columbia University recently marked its bi-centennial by paving all the paths leading to the Butler Library with asphalt blocks. Pittsburgh's new Gateway Center office development laid down more than 67,000 square feet of asphalt block walks in 1952.

Meanwhile, research and development continues to improve the product and the manufacture. A recent development in ornamental paving has been the new terrazzo-type block. This contains a special graded aggregate which is exposed by grinding the surface of the block. The result is a distinctive and very pleasing pattern.

PROMENADE DECKS

Asphalt blocks are ideal for promenade decks and utility roofs. They are safe, resilient, non-slippery and impervious to water. All expansion and contraction is accommodated in the joints. Most frequently, they are used with a bituminous mastic footing which provides maximum protection for the waterproofing membrane beneath the blocks. With the application of a five-ply felt roof, a 20-year bond will be furnished by leading roofing manufacturers.

The New York City Board of Education discovered more than fifteen years ago that school roofs offered hitherto undeveloped play areas where schools were suffering from an acute limitation of playground space. Similarly, other municipal and federal agencies have selected block paving for roof decks and terraces on hospitals, prisons, courthouses and post offices. In New York, there are several parking garage roofs which have taken ten years of daily punishment with little or no maintenance.

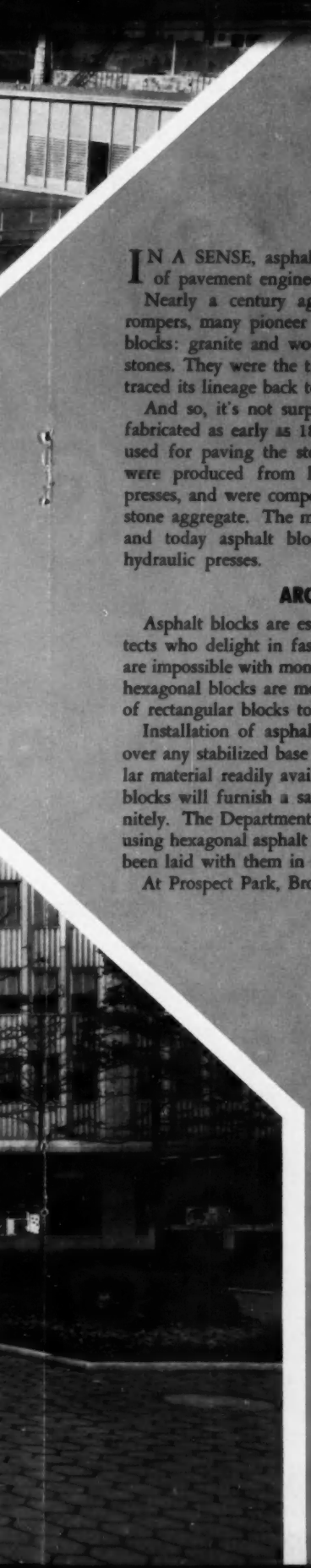
The Port of New York Authority is presently using a roof heliport landing of this type on its Administration Building. New terrazzo blocks have been installed on the mile-long observation deck at New York's great Idlewild Airport. The same material is specified for Detroit's Wayne County Major Airport and the Detroit Civic Center.

Leading industrial concerns long have recognized the advantages of utilizing their plant roof areas for storage and parking. Again, asphalt block answers the need. Recent installations have included the General Motors Company Chevrolet plant at Atlanta; the Fisher Body Division at Oakland, California; General Electric Company plants at Utica and Syracuse, New York; Bendix Aviation at Towson, Maryland, and Southfield Township, Michigan.

INDUSTRIAL FLOORING

Asphalt blocks have a 60-year record of proven satisfaction in industrial flooring. They offer a heavy-duty long-wearing surface that is not flammable and impermeable to water, is acid- and oil-resistant, and may be installed quickly and easily with simple tools and semi-skilled labor. They can be placed readily over an existing concrete floor with a bituminous adhesive.

An asphalt block floor will not crack, chip or spall. Further, it can easily be picked up and re-laid if machines are changed from one position to another. The problem of "dusting" with



Top:
New York Port Authority's heliport landing in Weehawken, New Jersey.

Center:
Hexagonal block stacked on pallets for shipment at Hastings block plant.

Bottom:
Block pavement at Pittsburgh's new Gateway Center office development.

Asphalt block promenade atop nurses' residence at Queens General Hospital, Jamaica, New York.

its resulting damage to valuable equipment is eliminated. Also, the blocks are shipped stacked on pallets which may be stored indefinitely outdoors, readily available as replacement units without taking up valuable storage areas within the plant.

Such large industrial firms as Westinghouse, General Motors, and Ford Motor Company, as well as the naval shipyards at Brooklyn, Charleston and Philadelphia have been using asphalt blocks for many years. And because they have four times the service life of existing flooring, asphalt blocks are presently replacing other unit-type flooring at the Cleveland Cadillac Tank Plant of the General Motors Corporation.

LOADING DOCKS AND PIERS

On loading docks, asphalt block has a special advantage in addition to low maintenance. The maintenance problem itself becomes a simple operation and there is no critical interruption in the flow of traffic on all lanes. Individual blocks can be replaced swiftly and easily. The New York Port Authority has used asphalt blocks with great success at its terminals in New York and Newark, and asphalt blocks set down on the loading docks at Macy's giant Manhattan department store in 1922 are still giving good service.

Similarly, more than 870,000 square yards of asphalt blocks have been used for pier surfacing throughout the country, successfully withstanding the beating of heavy traffic and standing loads. Typical is the performance of the block pavement at the Bush Terminal piers in Brooklyn, laid down in 1914 and still doing business at the same old stand.

HOW BLOCKS ARE MADE

The manufacture of modern asphalt blocks has come a long way since the days of the old hand press in San Francisco. Today they are produced by high-speed hydraulic presses. Hot bituminous mixture is fed from an overhead chute into a reciprocating device known as a "sliding head" at a temperature of 300 degrees Fahrenheit.

This sliding head receives the asphaltic mixture and funnels it into a mold cavity. Then the head moves into the "press" position where the blocks are compressed under pressure of 4,000 pounds per square inch. After completing the pressing action, the sliding head moves back to permit ejection of the block from the mold, then advances to thrust the finished block onto a conveyor belt. Simultaneously, this forward thrust opens the feeder chute to fill the mold cavity for the next block, completing the production cycle.

Meanwhile, the finished block is conveyed through cooling troughs and stacked on pallets, ready for shipment. They are manufactured in a 5″ x 12″ or 8″ x 16″ rectangular shape, in thicknesses ranging from 1¼″ to 3″, and in hexagonal pattern in 1½″ and 2″ thicknesses.

USE IS WORLD-WIDE

The installation of asphalt block is fairly foolproof. It is not subjected to the element of risk involved in improper handling since it comes from the block plant as a finished product of known quality. Naturally, for best results, it's important to make certain that that installation is carefully supervised.

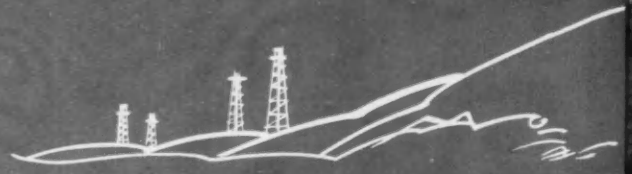
Since its inception almost a century ago, asphalt block paving has come a long way, literally and figuratively. It has found its way around the globe: to the streets of Asia, a bridge in Cuba, a post office in Alaska and a brewery in County Cork, Ireland, to a plaza in Brazil.

And whenever it is used it is withstanding the test of time.

Landscape architects employ asphalt blocks to build pleasing paving design.

First lift of black base is laid down on primed subbase for Oklahoma I-road.

Asphaltic concrete topping goes down on eight inches of sand asphalt base.



CUSTER MAKES ANOTHER STAND

Oklahoma introduces sand-asphalt base on interstate system in aggregate-shy Custer County

CUSTER COUNTY, in western Oklahoma, is short on coarse aggregates for road-building, but rich in sand. Subgrade support is uniformly high and construction is not hampered by heavy rains.

To the shrewd paving engineer those are conditions that virtually cry out for sand-asphalt base construction, and Oklahoma's road builders have done just that on a 9.69-mile stretch of its Interstate system west of Clinton in Custer County. What's more, they've built with pennies a modern superhighway which, to borrow from the classic engineering expression, any danged fool could have built with dollars.

$39,000 PER MILE

At a cost of $2.78 per square yard, Oklahoma has built nearly ten miles of heavy-duty pavement. This includes eight inches of hot plant-mixed sand asphalt base at $1.26 per square yard, topped with 4½ inches of asphaltic concrete at $1.52 per square yard. The design also calls for ten-foot outer and four-foot inner shoulders consisting of seven inches of hot sand asphalt base with a double bituminous surface treatment ranging in thickness from three-quarters to one inch.

The eight inches of black base were laid on a primed subbase in two-inch lifts with a tack coat of diluted emulsion between lifts. The hot sand mixture contained an average of 5.2 percent of 85-100 penetration asphalt. It was found that approximately 180 degrees Fahrenheit was the best temperature for initial rolling. Rolling at temperatures above 180 degrees caused lateral displacement. The plant mix temperature was adjusted accordingly, depending on the air temperature which fluctuated widely during the late winter and early spring months.

The base rolling was accomplished first with an eight- to ten-ton steel wheel roller. This was followed by a 12-ton pneumatic-tire roller, then finished off with another eight-ton steel wheel roller, bringing the final compaction to an average 97 percent of laboratory density.

PART OF I-40

A 35-foot median strip separates the new 24-foot-wide roadway from the original U.S. 66 which, as funds become available, will be improved to Interstate standards, formally establishing the new double-barreled highway as a segment of Oklahoma's I-40.

Asphalt stabilization of soil is no stranger to Oklahoma, but the Custer County project represents her initial adventure with hot-mix sand asphalt base for heavy-duty pavement, a design which already has proved itself in South Carolina where local shortages of coarse aggregates are offset by ample supplies of sand.

Construction men, already concerned about the dwindling deposits of good coarse aggregates, can take heart from Oklahoma's bold stand in Custer County. Asphalt, nature's most versatile engineering material, has come up with another sensible answer.

VIRGINIA
THE BEGINNING AND

Opening of new Richmond-Petersburg Turnpike will mark the closing of the toll road decade.

RICHMOND-PETERSBURG TURNPIKE

THIS MONTH, Virginia opens the nation's newest toll road—the Richmond-Petersburg Turnpike. The 34.7-mile ribbon of asphaltic concrete represents the Old Dominion's first experiment with the modern toll road. Its prospects for success are reflected in the open speculation that the road will be declared toll-free by 1978.

Conceived as a means of relieving the badly congested streets of the state capital, the $69 million project is expected to siphon off the torrent of traffic that wedges its way through the Richmond-Petersburg corridor between New York and Miami. It links U.S. 301 north of Richmond with U.S. 1 southwest of Petersburg. A series of complex interchanges in Richmond provide fast and convenient access to the city's business district, and a new James River crossing speeds traffic along to points south.

FOUR TOLL PLAZAS

Although traffic on the 60-mile-an-hour highway is slowed by four toll plazas, these will be a welcome change to motorists who will escape the 57 traffic lights on the alternate route. Tolls for the full trip range from sixty cents for passenger cars to $1.40 for the big four-axle tractor-trailer rigs. As the area undergoes increased industrial and residential development, a major share of the anticipated revenue is expected to come from local motorists and truckers making frequent short trips.

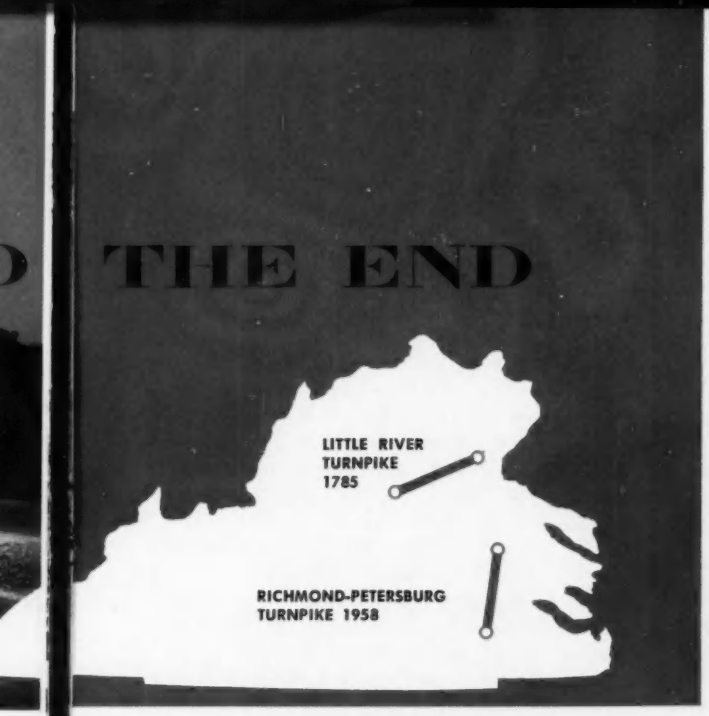
The smooth-riding carpet of modern heavy-duty asphaltic pavement cuts a swath through a lovely rolling countryside rich in American history. A grassy median strip, ranging from ten to twenty feet in width, separates the two 24-foot-wide roadways. A three-foot stabilized shoulder on the inner lane is replaced in restricted areas by a two-foot gutter with integral curb. For greater safety both roadways have a ten-foot asphalt-stabilized outer shoulder the entire length.

The pavement structure has a 14-inch overall thickness, including nine and one-half inches of asphaltic concrete. The surface course consists of two inches of hot-mix asphaltic concrete placed in one-inch lifts on seven and a half inches of asphaltic concrete base. This, in turn, is supported by five inches of soil aggregate.

$2.25 MILLION SAVING

Translating engineering data and construction features into dollars and cents, the choice of flexible paving over rigid pavement of comparable design meant an initial saving of approximately $2.25 million dollars. Additional savings in lower maintenance costs are anticipated in future years.

Thus, the new toll road represents the last word in highway construction. It offers an economical, yet fast and safe, route for local and interstate traffic. Of more than casual interest is the fact that, as the Federal road program takes over the task of speeding American motorists across the nation, the Richmond-Petersburg Turnpike may well be the last of these pay-as-you-ride superhighways in our generation.



LITTLE RIVER TURNPIKE

THE FORMAL OPENING of Virginia's Richmond-Petersburg Turnpike this month ushers in what could be the last of the modern American turnpikes, just as the unpretentious opening of the Little River Turnpike in northern Virginia more than 150 years ago heralded the coming of the first turnpike era.

Virginia's early toll roads radiated like a fan from the bustling port city of Alexandria, across the Potomac River from the site of what was to become the nation's capital. Over these roads came the wealth of the country upon which Alexandria depended for her existence. Many of the pikes followed primitive Indian trails or the meandering paths of the "rolling roads," so-named from the colonial habit of transporting tobacco to market. Tobacco planters rolled their crops to market in hogsheads along the easiest routes, avoiding rivers and hills.

DATES BACK TO 1785

Historically, the Lancaster Pike in Pennsylvania is regarded as the first formally chartered American toll road. Authorized in 1792, the 66-mile pike was opened to traffic in 1795. But as early as 1785, three full years before the nation was born, a commission was appointed to collect tolls on the Little River pike along which freight from as far west as the Ohio Valley was trundled into Alexandria. However, the heavy traffic wore out the road faster than the one-penny tolls could be collected to pay for repairs.

In 1795, to solve this problem, a "private turnpike charter was granted to build and operate for profit a new road from Alexandria to the ford of Little River." This became officially the Little River Turnpike.

The Little River Turpike Company began construction in 1802 with capital of $150,000 and stock selling at $100 a share. By 1806 tolls were being collected as 10-mile intervals were completed. In December 1811 the road reached its terminus at Aldie, which had been founded only the year before, at the ford of Little River.

ROAD 20 FEET WIDE

Most of the road was paved for a width of 20 feet with stone eight and nine inches in diameter. This was later taken up and replaced with smaller stone. Along the 34-mile route wooden bridges spanned the streams too deep to ford. These were later replaced by stone arches, several of which are in use today.

Even before the Little River Turnpike had reached Aldie, plans were in the making to extend its length. The first proposal was born out of Alexandria's challenge in the upland counties of Fauquier and Culpeper to the growing influence of Fredricksburg; but it was planned to reach the upper Shenandoah Valley by a new route.

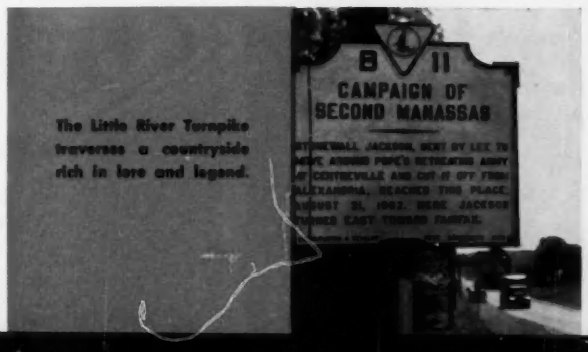
As a result, the Fauquier and Alexandria Turnpike Company was organized in 1808, and built a new road branching off from the Little River pike near Fairfax Courthouse via Centreville and Buckland to Warrenton. Following this venture, charters were secured in 1810 to convert to private turnpikes Dalrymple's roads leading from Aldie into the valley via Snicker's and Ashby's gaps. Thus, by 1816 the Little River Turnpike system had realized Alexandria's ambition to promote inland commerce. It then consisted of a main stem from Alexandria to Aldie and three prongs extending to Warrenton, Snicker's Gap, and Ashby's Gap.

ROAD RE-BUILT

In 1826 the Little River Turnpike Company's Board of Directors passed a resolution specifying that all future repairs be made according to the McAdam system of paving. Within the next 10 years, under the guidance of Thomas Ayre, a Scotsman experienced in the McAdam principle, approximately half of the roadbed was taken up and rebuilt with smaller stones laid about nine inches deep.

The President of the Company reported in 1830 that the road was in such good repair that a team could easily haul 16 barrels of flour over the newly "macadamized" road, an increase over the 10 barrels they could formerly haul.

Down through the years, reports from the superintendent of the Little River Turnpike, Thomas Ayre, indicates that the road was always kept in good condition. In 1831 his report read: "All that portion of the road executed in the McAdam plan is solid and good, having a coat of nine inches,



Old stone bridge that has been by-passed by shifting route of road.

The road today. In the distance are foothills of storied Blue Ridge.

a small portion excepted from the 26-mile stone to Whaley's being only covered seven inches deep, but it is contemplated in spring to increase the cover by applying the stone on hand."

CASUALTY OF WAR

The Company gave general satisfaction to the public as well as to its stockholders, and persisted as a going concern up to the Civil War. It was, indeed, one of the few Virginia turnpikes that paid regular dividends. In 1810, the first dividend amounted to $11,101.77. A second dividend was declared in 1815, which amounted to $21,920.29. Dividends were paid for a number of years, the usual amount being about four percent on the investment.

About the middle of the century, the "Iron Horse" appeared and people began to feel that the railroad was the only way to travel long distances. River steamboats and newly built canals were beginning to flourish and the once busy turnpikes fell into disuse. By 1850, road building had practically stopped.

In 1866, the Virginia Assembly sounded the requiem for the turnpike system in the Old Dominion: "Many turnpikes have been abandoned by the chartered companies having charge of them . . . and the said companies practically disbanded." It was decided that whenever such roads were legally abandoned, the counties were to take over the property rights of the turnpike companies.

THE END OF THE ROAD

Thus, the toll gates disappeared from the "great woods." The Little River Turnpike, Ashby's Gap pike, Warrenton pike, and the Georgetown pike, all became ghostly names.

These were the roads that knew the tread of history. Washington, Jefferson, and Marshall travelled them. Braddock's Red Coats followed them to disaster. Raw levies of buckskin-clad riflemen went forth on them to take post in the valley against the French and the Indians. They echoed to the march of their native sons in Confederate gray, and felt the heavy tread of the Northern invader.

Today, the once dusty path that developed into the proud and important Little River Turnpike is being brought back into prominence. Between Annandale and Fairfax on Route 236, the two-lane byway is being transformed into a modern, heavy-duty asphalt paved, four-lane superhighway. But that's another story.

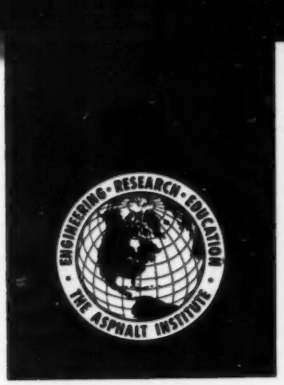
MEN AT WORK

BACK THERE when you and I were very young, Magee, they called Alaska "Seward's Folly." Later, it became known around the Interior Department as "Ghig's Headache" when Anthony Ghiglione, as boss of the Alaska Road Commission, tackled his lonely igloo-to-market road-building program. Today, Alaska's road problems have been absorbed into the greater problems of the U.S. Bureau of Public Roads, but Mr. Ghiglione also was wafted along into the Bureau where he accumulated fresh problems as chief of the Foreign Projects Office. In the October QUARTERLY, Ghig will describe various clinical aspects of his chronic migraine in an article appropriately entitled *"Paving the Permafrost."*

For the warm-blooded, we will orbit wildly from apogee to perigee with an account of the Inter-American Highway, a fairly colossal road-building project which has been quietly pushing its way south from Mexico to the Panama Canal since 1955. When completed, probably next year, this *"Mayan Miracle"* will represent some 1250 miles of asphalt pavement, all the way from tortillas to the Torrid Zone.

A long look at California's admirable custom of adding paved shoulders to her fine highways is offered in *"California Puts a Shoulder To The Wheel,"* and we plan to take a nostalgic trek along the old Natchez Trace, now being resurrected as a modern, asphalt-paved parkway.

Finally, our October harvest will yield a study of Virginia's beautiful Blue Ridge Parkway, a remarkable example of cold-mix paving that is scheduled for resurfacing this year after 22 years of trouble-free service.



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